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27 September 2005 Amendment
Responsive to 27 June 2005 Office Action

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Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1 (Currently Amended) A map generation device, comprising:

an image appointment unit that receives user appointment of at least one position in a building existing within an aerial photograph to designate the at least one position as part of a building region;

a polygon extraction unit that extracts ~~a building region~~ pixels based on a result of discriminating a color around the ~~appointed~~ at least one position, sets the extracted pixels as an extracted building region, and extracts a polygon line of the extracted building region; and

a vector generation unit that generates a vector of the polygon line of the extracted building region.

Claim 2 (Currently Amended) The map generation device according to claim 1, ~~further~~ comprising a roof texture analysis unit that analyzes colors around the ~~appointed~~ at least one position to determine sample colors for ~~matching~~ discriminating, a discrimination threshold, and a region searching range,

wherein the polygon extraction unit extracts building region pixels based on a result of discriminating a similarity between a color of ~~a roof of a building in the~~

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region searching range and the sample colors for ~~matching~~discriminating, and extracts a line around the extracted building region pixels as the polygon line.

Claim 3 (Currently Amended) The map generation device according to claim 2, wherein the roof texture analysis unit extracts a plurality of pixels from a predetermined region including the ~~appointed~~at least one position, and determines the sample colors for ~~matching~~discriminating, the discrimination threshold, and the region searching range based on a result of statistically analyzing colors of the plurality of pixels.

Claim 4 (Currently Amended) The map generation device according to claim 3, wherein the roof texture analysis unit expands the region of the discrimination threshold and reduces the region searching range when a variance is large in the colors of the plurality of pixels extracted from the predetermined region including the ~~appointed~~at least one position.

Claim 5 (Currently Amended) The map generation device according to claim 1, wherein the polygon extraction unit extracts pixels largely different in color from adjacent pixels as edge pixels, determines boundary lines based on the edge pixels, and expands the extracted building region to the boundary lines ~~approximate to the building region to correct the extracted building region.~~

Claim 6 (Currently Amended) The map generation device according to claim 1, wherein the polygon extraction unit rotates the extracted building region so as to

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set the polygon line of the extracted building region in a predetermined axis direction, and smoothes the polygon line.

Claim 7 (Currently Amended) The map generation device according to claim 1, ~~further~~ comprising a polygon correction unit that, in a case where the polygon line extracted by the polygon extraction unit corresponds to a predetermined linking pattern, corrects the polygon line to one of a straight line and lines crossing each other at a predetermined angle.

Claim 8 (Currently Amended) The map generation device according to claim 1, ~~further~~ comprising a structural analysis and integration unit that, in a case where a line of a building roof corresponds to a predetermined integration pattern, integrates the extracted building region so as to include the line.

Claim 9 (Currently Amended) The map generation device according to claim ~~8, 4,~~ wherein the structural analysis and integration unit integrates the building region ~~appointed at least one~~ by a plurality of inputted positions.

Claim 10 (Currently Amended) The map generation device according to claim 1, ~~further~~ comprising a ground projection unit that, in a case where the aerial photograph shows a building obliquely, corrects distortion due to a height of the building, and projects a building polygon shape on a ground.

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Claim 11 (Currently Amended) A map delivery method, which is used to deliver a map by associating the map created by the map generation device according to ~~any one of claims~~ claim 1 with the aerial photograph.

Claim 12 (Currently Amended) A program for causing a computer to execute a map generation method, the method comprising:

receiving user appointment of at least one position in a building existing within an aerial photograph, to designate the at least one position as part of a building region;

extracting a pixels corresponding to an extracted building region based on a result of discriminating a color around the ~~appointed~~ at least one position, and extracting a polygon line of the extracted building region; and

generating a vector of the polygon line of the extracted building region.

Claim 13 (Currently Amended) The computer program product according to claim 12, further-comprising:

analyzing colors around the ~~appointed~~ at least one position to determine sample colors for ~~matching~~ discriminating, a discrimination threshold, and a region searching range;

extracting building region pixels based on a result of discriminating a similarity between a color of a roof of a building in the region searching range and the sample colors for ~~matching~~ discriminating, and

extracting a line around the extracted building region pixels as the polygon line.

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Claim 14 (Currently Amended) The computer program product according to claim 12, ~~further~~ comprising:

extracting pixels largely different in color from adjacent pixels as edge pixels, and determining boundary lines based on the edge pixels; and

expanding the extracted building region to the boundary lines ~~approximate to correct the extracted building region, and correcting the building region.~~

Claim 15 (Currently Amended) The computer program product according to claim 12, ~~further~~ comprising:

rotating the extracted building region so as to set the polygon line of the extracted building region in a predetermined axis direction; and

smoothing the polygon line after the rotation.

Claim 16 (Currently Amended) The computer program product according to claim 12, ~~further~~ comprising, In a case where the polygon line extracted ~~by the polygon extraction unit~~ corresponds to a predetermined linking pattern, correcting the polygon line to one of a straight line and lines crossing each other at a predetermined angle.

Claim 17 (Currently Amended) The computer program product according to claim 12, ~~further~~ comprising:

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in a case where a line of a building roof corresponds to a predetermined integration pattern, integrating the extracted building region so as to include the line; and

integrating the building region appointed by including a plurality of inputted positions.

Claim 18 (Currently Amended) The computer program product according to claim 12, further comprising, in a case where the aerial photograph shows a building obliquely, correcting distortion due to a height of the building, and projecting a building polygon shape on a ground.

Claim 19 (New) A map generation method, comprising:

receiving user appointment of at least one position in a building existing within an aerial photograph, to designate the at least one position as part of a building region;

extracting pixels corresponding to an extracted building region based on a result of discriminating a color around the at least one position, and extracting a polygon line of the extracted building region; and

generating a vector of the polygon line of the extracted building region.

Claim 20 (New) The map generation device according to claim 1, wherein the user appointment of the at least one position with respect to the image appointment unit is executed manually, and wherein the operations of the polygon extraction unit and the vector generation unit are executed automatically.